UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,717	08/16/2006	Bo-Lennart Johansson	PU0460	8795

22840 7590 12/15/2008

GE HEALTHCARE BIO-SCIENCES CORP.
PATENT DEPARTMENT
800 CENTENNIAL AVENUE
PISCATAWAY, NJ 08855

EXAMINER	
SAUNDERS, DAVID A	

ART UNIT	PAPER NUMBER
1644	

MAIL DATE	DELIVERY MODE
12/15/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,717	JOHANSSON ET AL.	
	Examiner	Art Unit	
	David A. Saunders	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5,6,8-18 and 26-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5,6,8-18 and 26-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/12/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

AMENDMENT ENTRY

Amendment of 8/12/08 has been entered. Claims 1, 5-6, 8-18 and 26-29 are pending and are under examination.

OBJECTION(S)/REJECTION(S) OF RECORD WITHDRAWN

The amendment has overcome previously stated issues as follows:

The objection to claim(s) 4, 5, 18 and 19.

The rejection of claim(s) 1-5, 7, 9-12, 17, 20 and 25-30 under 35 USC 112, 2nd paragraph.

The 102 prior art rejection of claim(s) 1-4, 17 And 23-30 based upon Lihme et al. However, this rejection has been modified infra, with reliance upon Prior et al as a secondary reference.

The 102 prior art rejection of claim(s) 1-3, 23-25, 27 and 29-30 based upon Johansson et al (Jour. Chromat. A, 1016, 35, 2003). This journal reference does not hint at any further chromatography purification steps.

The 102 prior art rejection of claim(s) 1-3, 23-25, 27 and 29-30 based upon Maloisel et al (WO 03/024588). This reference does not hint at any further chromatography purification steps.

The prior art rejection of claim(s) 19-20 and 22 based upon Belew et al in view of Hunt et al, since these claims have been cancelled.

The prior art rejection of claim(s) 23-25 and 30 based upon Lihme et al, Belew et al, Johansson et al or Maloisel et al in view of Hunt et al, since these claims have been cancelled.

The prior art rejection of claim(s) 21 based upon Belew et al in view of Hunt et al, and further in view of Welt et al, since claim 21 has been cancelled.

NEW REJECTION(S) UNDER 35 USC 112, SECOND PARAGRAPH

Claims 1, 17 and 26-29 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 17 are each unclear because the preamble calls for a "method of capture". However, by virtue of applicant's addition of one or more following "additional chromatography steps", the claimed method appears to be accomplishing more than a mere "method of capture".

Claims 1 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are:

Each of claims 1 and 17 fail to recite the essential step of eluting the adsorbed antibodies from the first chromatography resin, prior to conducting the "one or more additional chromatography steps". It is unclear how "additional chromatography steps" would be conducted without a prior step of eluting.

NEW REJECTION(S) UNDER 35 USC 112, FIRST PARAGRAPH

Claims 1, 17 and 26-29 rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. A step of eluting the adsorbed antibodies from the first chromatography resin, prior to conducting the "one or more additional chromatography steps" is critical or essential to the practice of the invention, but not

included in the claim(s). The claimed invention is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

Unless one removes the adsorbed antibodies from the first chromatography resin, how can one further process the antibodies on some additional chromatography resin? The rejection can, alternatively, be considered as a new matter rejection, since the original disclosure fails to teach any method of further conducting "one or more additional chromatography steps", without a prior step of eluting; applicant is thus claiming less than what was originally disclosed, in terms of a total process of purification.

MAINTAINED MODIFIED REJECTION(S) UNDER 35 USC 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 17 and 26-39 are rejected under 35 U.S.C. 103(a) as being obvious over Lihme et al (6,498,236) in view of Prior et al (5,118,796).

Claims 1, 17 and 26-29 were previously rejected under 102, over Lihme et al alone.

Lihme et al teach a chromatography resin having a multi-modal ligand, which comprises a mono- or bicyclic aromatic or heteroaromatic ligand and an acidic substituent, such as a carboxylic acid. See abstract; see col. 5, lines 25-67; col. 15, lines 25-41. The carboxylic acid substituent would serve as a weak cation exchanger, in accord with instant dependent claim 27, in view of the fact that applicant's own disclosure teaches that a carboxylic acid group can serve as a weak cation exchanger. Though Lihme et al do not verbatim teach that the carboxylic group serves as a weak cation exchanger, such is what the carboxylic acid group inherently is. The nature of the mono- or bicyclic aromatic or hetero aromatic ligand is disclosed at col. 13, line 19-col. 14, line 67. Numerous of these have structures consistent with the limitations of instant claims 1 and 17. As such, the affinity ligands of Lihme et al are multi-modal".

Lihme et al teach the contacting step of instant claim 1. See the abstract; see, for example, col. 5, lines 54-60; col. 6, lines 35-52. The contacting step adsorbs immunoglobulin/ antibody to the resin. Some contaminants wash through the column, while other contaminants adsorb to the column. Adsorbed immunoglobulin/antibody and contaminants are then differentially eluted from the resin, See, for example, col. 6, line 54-col. 7, line 57. The immunoglobulin/antibody being purified can be from a variety of sources; see col. 8, lines 7-24; col. 9, line 18- col. 10, line 32.

Regarding the concluding step of amended claims 1 and 17, Lihme et al teach further purification steps (e.g. col. 7, lines 37-47). Lihme et al do not teach the precise nature of such further purification steps that they describe as being "of optional character". However, Prior et al show a sequence of steps in method involving the contacting of antibodies/immunoglobulins with a cation chromatography medium/ matrix/resin, followed by the addition of an eluent to release the antibodies/ immunoglobulins therefrom. The eluate is then further purified via a second chromatography step, which is an anion-exchange chromatography step. Since Prior et

al show that it is art known to further purify the eluate of a cation exchange column via an anion exchange chromatography step, it would have been obvious to conduct a second chromatography step, such as an anion exchange chromatography step, following cation exchange chromatography on the cation exchange resin of Lihme et al.

Regarding claims 26 and 28, Lihme et al teach purification of monoclonal antibodies from hybridoma cell cultures (e.g. col. 1, lines 30-34; col. 9, lines 18-26).

Regarding claim 29, Lihme et al teach purification of immunoglobulins from sources such as animal plasma or sera, or colostrum (e.g. abstract). Any of these sources of immunoglobulins would contain polyclonal antibodies.

From the above, method claims 1, 17 and 26-29 would have been obvious.

Claims 1, 5-6, 8-10, 16-18, 26-27 and 29 are rejected under 35 USC 102(b) or (e) as anticipated by Belew et al (US 6,852,230 or WO 02/053288).

WO 02/053288 has 102(b) date, as of its publication date of 7/11/02, since it was published more than one year prior to applicant's Swedish priority date of 2//27/04. US 6,852,230 has a 102(e) date of 6/19/03. For convenience the examiner will only refer to US 6,852,230 by col. and line numbers. No copy of WO 02/053288 is presently provided to applicant; an imaged copy of this reference may be found in the file record of copending Ser. No. 10/589,718

Belew et al teach multi-modal affinity ligands containing an aromatic or heteroaromatic ring and a carboxylic acid group, as a weak cation exchange group. Proteins such as BSA or IgG can be adsorbed thereto and then eluted therefrom. See the ligands listed in Table I, with the absorbance maximum and recovery percentages indicated. From the structures of the mono- or bicyclic aromatic or hetero aromatic ligands disclosed in Table I, it is noted that numerous of these have structures consistent with the limitations of instant claims 1 and 17.

Regarding the concluding step of amended claims 1 and 17, respect to dependent claim 4, note the teaching that there can be further purification steps, such as "traditional ion-exchange chromatography" (col. 1, line 66-col. 2, line 12 and col. 3, lines 10-27).

With respect to independent claims 5 and 18, as well as dependent claims 9-10, all steps are shown by the teaching of further purification steps, such as "traditional ion-exchange chromatography" (col. 1, line 66-col. 2, line 12 and col. 3, lines 10-27).

For dependent claims 6 and 26, note cell cultures taught at col. 13, lines 42+.

Regarding dependent claims 8 and 27, the taught carboxylic acid group is a weak cation exchange group.

Regarding dependent claims 16 and 29, the exemplified IgG preparations would contain polyclonal antibodies.

From the above noted teachings, instant method claims 1, 5-6,8-10, 16-18, 26-27 and 29 would have been obvious.

Claims 1, 5, 11-15 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Belew et al in view of Prior et al (5,118,796, cited on Form 892).

The Belew et al reference has been cited supra, against claim 5, for showing a method involving the contacting of antibodies/immunoglobulins with a multi-modal chromatography medium/ matrix/resin, followed by the addition of an eluent to release the antibodies/immunoglobulins therefrom. The eluate is then further purified via a second chromatography step, such as an ion-exchange chromatography step. Prior et al show a similar sequence of steps in method involving the contacting of antibodies/immunoglobulins with a cation chromatography medium/ matrix/resin, followed by the addition of an eluent to release the antibodies/immunoglobulins therefrom. The eluate is then further purified via a second chromatography step, which is an anion-exchange chromatography step. Since the sequences of steps taught by both Belew et al and Prior et al are similar, it would have been obvious that the second chromatography step of Belew et al would be conducted with an anion exchange resin. Thus instant dependent claim 11 would have been obvious.

Regarding claim 12, Belew et al show mixed modal anion exchangers, and there is no reason why a second ion exchange medium, which is an anion exchange medium could not a mixed mode anion exchanger.

Regarding dependent claims 13-14, note Fig. 1 of Prior et al. This teaches an embodiment in which the immunoglobulin is adsorbed to and then eluted from the anion exchange column (right most track of Fig. 1) and an embodiment in which the immunoglobulin flows through the anion exchange column (middle track of Fig. 1).

Regarding dependent claim 15, Prior et al show purification of monoclonal antibodies (col. 9, lines 10+).

Regarding dependent claim 28, Prior et al show purification of monoclonal antibodies (col. 9, lines 10+).

Applicant's arguments filed 8/12/08 have been fully considered but they are not persuasive for the following reasons.

With respect to Lihme et al. applicant has urged that Lihme et al do not motivate a second step which is another chromatography step. The examiner presently relies upon Prior et al for teaching a second step which is an anion exchange chromatography step, following a previous cation exchange step. Applicant's arguments with respect to Lihme et al are moot in view of the new ground(s) of rejection.

With respect to the 102 rejection over Belew et al, applicant's arguments are mere self serving conclusions drawn by an attorney rather than showings in declaration form presented by one of skill in the art. Mere attorney argument is not evidence. Cases which hold that attorney argument is not evidence include: In re DeBlauve 222 USPQ 191, 196; Meitzner v. Mindick 193 USPQ 17, 22; In re Pearson 181 USPQ 641, 646; In re Linder 173 USPQ 356, 358; In re Schulze 194 USPQ 716, 718; In re Cole 140 USPQ 233; and In re Watters 77 USPQ 609, 610.The attorney arguments include statements which are not evidence, unless supported by an appropriate affidavit or declaration. MPEP 716.01 (c). More specifically, the attorney has argued that Belew et al merely show mixed modal cation exchange of IgG as "a model protein" but has offered no factual reasons why one of skill would not have immediately envisioned IgG as being representative of, at the least, polyclonal IgG fractions (e.g. prepared from antisera), or of IgG monoclonal antibodies (e.g. from hybridoma culture fluid).

Applicant's urgings in this regard further argue that no one would have considered that chromatography on the resin of Belew et al "would be useful as a first step in a multistep process". Except for certain dependent claims which specify the nature of the "liquid" used in the "contacting" step, there is nothing in the claims which would require that the resin of Belew et al would be used "as a first step in a multistep process". The scope of the claims is open by virtue of the recitation of "comprising" in the preamble of each of claims 1, 5, 17 and 18. Thus some other step can be conducted before the "contacting" step of instant claims 1, 5, 17 and 18.

The attorney has also argued, without a showing from one of skill in the art, that the skilled person would have only thought of using affinity chromatography (e.g. on protein A) as a first capture step, and would not have considered that chromatography on the resin of Belew et al would be useful as a first capture step in a multistep process. This is a mere attorney conclusion and is counter to the art of record. For example, note Prior et al, at col. 1, lines 37-57 and col. 8, lines 44-64. Also, note Lihme et al at col. 2, lines 38-51 and col. 12, line53-col. 13, line 10.

The attorney has further argued that one of skill would not consider applying the teachings of Belew et al for "an industrial scale process". This argument is irrelevant for a case of anticipation. It would also be irrelevant for the case of obviousness. See MPEP 2145, part VII.

Applicant's arguments concerning the rejection over Belew et al in view of Prior et al have merely repeated the arguments concerning Belew et al alone. Since the rejection over Belew et al alone has been maintained, so has the rejection over Belew et al in view of Prior et al.

FINALITY

Applicant's amendment necessitated the modified/new ground(s) of rejection presented in this Office action. No new reference has been applied. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

CONTACTS

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Saunders, whose telephone number is 571-272-0849. The examiner can normally be reached on Mon.-Thu. from 8:00 am to 5:30 pm and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eileen O'Hara, can be reached on 571-272-0878. The fax phone number for the organization where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Typed 12/8/08 DAS

/David A Saunders/

Primary Examiner, Art Unit 1644